2007

10 The table below shows a relationship between x and y.

x	y
-5	14
-1	6
2	0
4	-4

Which of these equations describes this relationship?

F $\quad y = \frac{1}{2}x - 6$

G $\quad y = -\frac{1}{2}x - 2$

H $\quad y = 2x - 4$

J $\quad y = ^-2x + 4$

12 ECR The table below shows the age and the value of a computer.

VALUE OF A COMPUTER

Age (in Years)	Value
0	$800
1	$620
2	$410
3	$200

Complete the following in the Answer Book:

- Write an equation for a line of best fit. (If you choose to draw a graph to help you write the equation, use the grid provided in the Answer Book.)
- What is the slope of your equation? What does the slope represent in the context of this problem?
- What is the age of the computer when its value is $300? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.
- Will your equation remain a good model to predict the value of a computer when it is 6 years old? Use mathematics to justify your answer.

11 Mary is considering two job offers. Job A pays $8.00 an hour and offers a one-time $100 bonus. Job B pays $8.50 an hour and offers a one-time $80 bonus. How many hours would Mary have to work to earn the same amount of money at Job B as at Job A?

A $\quad$ 40

B $\quad$ 41

C $\quad$ 420

D $\quad$ 428

23 ECR At the beginning of the summer, Sarah has $250. She takes a summer job and saves $150 per week. Felicia has $1,650 at the beginning of the summer. She travels during the summer and spends $200 per week.

Complete the following in the Answer Book:

- Write an equation that represents the amount of money Sarah has at the end of each week.
- Write an equation that represents the amount of money Felicia has at the end of each week.
- Graph the two equations on the grid provided in the Answer Book. (Suggested graphing window: $0 \leq$ weeks ≤ 10; $0 \leq$ amount ≤ 2000.)
- At the end of which week do Sarah and Felicia have the same amount of money? How much money do they have? Use mathematics to justify your answer.

Algebra/Data Analysis Public Release Problems

2008

12 The following formula can be used to find the wind-chill temperature (w) when the wind speed is 20 miles per hour.

$$w = {}^-39 + \frac{3}{2}t \qquad \left(t = \text{actual air temperature}\right)$$

Which of these is the <u>actual</u> air temperature if the wind-chill temperature is $^-12°$?

F $\quad {}^-57°$

G $\quad {}^-21°$

H $\quad 18°$

J $\quad 41°$

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19 Marina has $20 in a savings account. She wants to deposit $10 each week for x weeks into her savings account. If she does not withdraw any money, which expression below represents the total amount of money, in dollars, she will have in her savings account in x weeks?

A $\quad 10(20+x)$

B $\quad x(10+20)$

C $\quad 10x+20$

D $\quad 20x+10$

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21 Sean's movie rental company charges a monthly fee of $5.00 plus an additional cost of $1.25 per movie rental. Which of these equations represents the total monthly cost (c) of renting x movies?

A $\quad c=1.25x+5.00$

B $\quad c=3.75x+5.00$

C $\quad c=5.00x+1.25$

D $\quad c=5.00x+3.75$

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23 William charges $4 per hour to babysit. LaRhonda charges $10, plus an additional $2 per hour to babysit. Both William and LaRhonda work the same number of hours. After how many hours will they earn the same amount of money?

A $\quad$ 2 hours

B $\quad$ 2.5 hours

C $\quad$ 4.5 hours

D $\quad$ 5 hours

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34 Look at the function that is graphed below.
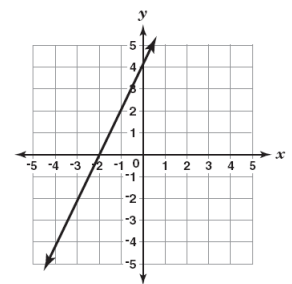
Which of these equations represents this function?

F $\quad y=\dfrac{1}{2}x-4$

G $\quad y=\dfrac{1}{2}x+2$

H $\quad y=2x-2$

J $\quad y=2x+4$